

Serial No. 10/622,467  
Amdt. dated July 27, 2006  
Reply to Office Action of May 17, 2006

Docket No. HI-0169

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A Private Branch Exchange (PBX) apparatus for transmitting and receiving CID (Caller ID) comprising:

an Analog Trunk Convergency (ATC) ~~unit~~circuit for converging with an exchange in the PBX connected to the exchange;

a Subscriber Line Convergency (SLC) ~~unit~~circuit for transmitting CID and/or data by converging with a subscriber line connected to each port;

a control ~~block~~circuit for controlling a CID service for the analog trunk and the subscriber line ~~units~~circuits;

a data path control ~~block~~circuit for controlling data transmission through a data path between the ATC ~~unit~~circuit and the SLC ~~unit~~circuit;

a CID service ~~unit~~circuit, the CID service ~~unit~~circuit including a CID and signal detecting ~~unit~~circuit and a CID and signal transmitting ~~unit~~circuit that each perform digital signal processing on the CIDs and signals;

a signal transmitting/detecting ~~block~~circuit for performing signal transmitting and/or detecting through the data path; and

a switching ~~block-circuit~~ for connecting the data path between the CID service ~~circuit~~, and the ATC ~~unit-circuit~~ and the SLC ~~unit-circuit~~, and for selectively switching the data path between the signal transmitting/detecting ~~block-circuit~~ and the CID service ~~unit-circuit~~.

2. (Currently Amended) The apparatus according to claim 1, wherein the ATC ~~unit-circuit~~ comprises:

a plurality of ports, each port comprising a converting ~~block-circuit~~ for converting the CID received from a public exchange through a subscriber line or office line into analog data and transmitting the data to the switching ~~block-circuit~~ through a highway as a data path, a ring detecting ~~block-circuit~~ for detecting a ring signal received from the public exchange through the subscriber line, and a holding line for establishing and holding the subscriber line; and

a local detecting ~~block-circuit~~ connected to the ports, for controlling CID transmission through a system path.

3. (Currently Amended) The apparatus according to claim 1, wherein the SLC ~~unit-circuit~~ comprises:

a plurality of ports, each of the ports comprising: a converting ~~block-circuit~~ for converting the CID transmitted through the switching ~~block-circuit~~ into a digital signal, a ring transmitting ~~block-circuit~~ for transmitting a ring to an affected receiver terminal in response to a

ring transmission message from the local control block, and an off-hook detecting ~~block-circuit~~ for detecting off-hook status of the affected terminal of a receiver; and

a local control ~~block-circuit~~ for controlling the transmission of the CID transmitted through a system bus.

4. (Currently Amended) An apparatus in a Private Branch Exchange (PBX) for transmitting and receiving a Caller ID (CID) comprising:

a CID detecting ~~block-circuit~~ for detecting a system signal and/or a CID received through a highway as a data path connected by a switching block, and storing the signal and/or the CID in a corresponding area per port inside a CID detection memory block;

a CID transmitting ~~block-circuit~~ for transmitting the CID to an affected receiver terminal through the highway as the data path;

a CID detection memory for assigning a memory area to each of subscriber ports of the SLC ~~unit-circuit~~ and storing the signal and/or the CID for a corresponding port;

a CID transmitting memory for storing a system signal and/or a CID in each port, in order to transmit a predetermined CID to an affected receiver terminal when a ring signal is transmitted to the affected receiver terminal; and

a local control ~~block-circuit~~ for controlling CID transmission to a corresponding port in a Subscriber Line Convergency (SLC) ~~unit-circuit~~ through a system bus by reading the

signal and/or the CID of each port from the CID detection memory,

wherein the apparatus detects the CID or the system signal for a transmitted or received call at an Analog Trunk Convergency (ATC) ~~unit~~circuit and the SLC ~~unit~~circuit in the PBX and transmits the detected CID or signal to a receiver terminal.

5. (Currently Amended) The apparatus according to claim 4, wherein the CID detecting ~~block~~circuit comprises:

a highway convergency ~~block~~circuit for receiving the signal and/or the CID by converging with the data path connected by the switching block;

a CID detecting ~~block~~circuit for detecting the CID received from the highway convergency block;

a system signal detecting ~~block~~circuit for detecting a system signal transmitted to the highway convergency block; and

a memory interface ~~block~~circuit for interfacing with the CID detection memory, to store the CID detected by the CID detecting ~~block~~circuit and the signal detected by the system signal detecting ~~block~~circuit in a predetermined memory area of a corresponding port.

6. (Currently Amended) The apparatus according to claim 4, wherein the CID transmitting ~~block~~circuit comprises:

a memory interface ~~block-circuit~~ for interfacing CID that is transmitted from the CID transmitting memory;

a CID transmitting ~~block-circuit~~ for transmitting the CID from the CID transmitting memory to a highway convergency block, in order to transmit the CID to the switching block;

a system signal transmitting ~~block-circuit~~ for transmitting the system signal received from the CID transmitting memory; and

a highway convergency ~~block-circuit~~ for transmitting the signal and/or the CID by converging with the highway as the data path connected to the switching block.

7. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

establishing a line with the PBX through a general switched telephone network;

converting a CID received through the line, and storing the CID through a switching ~~block-circuit~~ in a CID service ~~unit-circuit~~ at the PBX that includes at least one memory; and

transmitting all or part of the stored CID to a terminal, through the switching ~~block-circuit~~ and/or a Subscriber Line Convergency (SLC) ~~block-circuit~~ and display the CID on the terminal.

8. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

storing CIDs in a first memory in a CID service ~~unit~~circuit at the PBX;

storing preassigned CIDs for transmission out of the stored CIDs in a second memory in the CID service ~~unit~~circuit; and

transmitting the preassigned CIDs stored in the second memory to a caller ID terminal through a switching ~~block~~circuit and/or a Subscriber Line Convergency (SLC) ~~unit~~circuit.

9. (Currently Amended) The method according to claim 8, wherein the first memory comprises a caller detection memory of the CID service ~~unit~~circuit.

10. (Currently Amended) The method according to claim 8, wherein a system control ~~block~~circuit stores the preassigned CIDs out of the stored CIDs in the second memory through a control ~~unit~~circuit of the CID service ~~unit~~circuit, the second memory comprising a CID transmitting memory .

11. (Currently Amended) The method according to claim 8, wherein the storing CIDs

in the first memory comprises:

receiving a ring from a public exchange to an Analog Trunk Convergency (ATC)

~~unit~~circuit in a PBX;

detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, to a system control ~~block~~circuit through a system bus regarding the reception of the ring;

if receiving the ring is reported, connecting, at the system control ~~block~~circuit in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service ~~unit~~circuit through a switching block;

detecting, at a CID detecting block, the CID through a highway convergency ~~block~~circuit based on a predetermined signal; and

storing the detected CID in a predetermined area per port in a CID detection memory, through a memory interface block.

12. (Currently Amended) The method according to claim 8, wherein storing prearranged CIDs for transmission in the second memory comprises:

if receiving the call is reported from the Analog Trunk Convergency (ATC) ~~unit~~circuit, transmitting, at a system control block, a ring transmission message to a local control ~~block~~circuit in a Subscriber Line Convergency (SLC) ~~unit~~circuit using a system bus through a

system bus control block, and simultaneously, transmitting a system signal and/or a caller ID message; and

if the local control ~~block-circuit~~ receives at least one of the ring transmission message, the system signal, and the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory.

13. (Original) The method according to claim 8, further comprising:

displaying the transmitted CIDs on the caller ID terminal.

14. (Currently Amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

receiving a ring from a public exchange to an Analog Trunk Convergency (ATC)

~~unit~~circuit in a PBX;

detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, the reception of the ring to a system control ~~block-circuit~~ through a system bus;

if receiving the ring is reported, connecting, at the system control ~~block-circuit~~ in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service ~~block-circuit~~ at the PBX through a switching block;



detecting, at a CID detecting block, the CID through a highway convergency ~~block-circuit~~ based on a predetermined signal;

storing the detected CID in a predetermined area per port in a CID detection memory of the CID service block, through a memory interface block

if receiving the ring is reported from the ATC ~~unit-circuit~~, transmitting, at a system control block, a ring transmission message to a local control ~~block-circuit~~ in a Subscriber Line Convergence (SLC) ~~unit-circuit~~ using a system bus through a system bus control block, and simultaneously, transmitting a system signal and/or a caller ID message;

if the local control ~~block-circuit~~ receives at least one of the ring transmission message, the system signal, or the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory in the CID service block;

reading, at a system control block, the system signal and/or the CID stored in the CID transmitting memory, and transmitting the CID to the SLC ~~unit-circuit~~ through a switching ~~block-circuit~~ and a system bus; and

if the local control ~~block-circuit~~ in the SLC ~~unit-circuit~~ provides the CID to a corresponding port, transmitting the CID through a subscriber line and displaying the CID on a caller ID phone at a subscriber side.

15. (Currently Amended) A CID service ~~unit~~circuit in a PBX comprising:  
a first memory configured to receive and store a Caller ID (CID);  
a second memory configured to store preassigned CIDs out of the stored CIDs  
for transmission; and  
a switching ~~block~~circuit configured to transmit the CIDs stored in the second  
memory to a caller ID terminal.

16. (Currently Amended) The communication system of claim 15, further  
comprising:  
a Subscriber Line Convergency (SLC) ~~unit~~circuit configured to receive the CIDs from  
the switching ~~block~~circuit and to route the CIDs to the caller ID terminal.

17. (Original) The communication system of claim 15, wherein the first memory  
is a caller detection memory of a CID service block.

18. (Original) The communication system of claim 15, wherein the second  
memory is a CID transmitting memory.

19. (Currently Amended) The communication system of claim 18, further

comprising:

a system control ~~block-circuit~~ configured to store the preassigned for transmission in the CID transmitting memory, through a control ~~block-circuit~~ of a CID service ~~unit-circuit~~.

20. (Currently Amended) The communication system of claim 15, further comprising:

an Analog Trunk Convergency (ATC) ~~unit-circuit~~ configured to receive a ring from a public exchange;

a ring detecting ~~block-circuit~~ configured to detect whether the ring is received, and to report the reception of the ring;

a system control ~~block-circuit~~ in the network exchange, configured to connect a data path of a corresponding port to a Caller ID (CID) service ~~unit-circuit~~ through a switching block, if the ring is reported as received;

a CID detecting ~~block-circuit~~ configured to detect the CID through a highway convergency ~~block-circuit~~ based on a predetermined signal; and

a memory interface ~~block-circuit~~ configured to store the detected CID in a predetermined area per port in a CID detection memory.

21. (Currently Amended) The communication system of claim 15, further

comprising:

a system control ~~block-circuit~~ configured to transmit a ring transmission message to a local control ~~block-circuit~~ in a Subscriber Line Convergency (SLC) ~~unit-circuit~~, and to transmit a system signal and/or a caller ID message, if the call is reported from an Analog Trunk Convergency (ATC) ~~unit-circuit~~ as received; and

wherein the second memory id configured to store a system signal and/or caller ID, if the local control ~~block-circuit~~ receives at least one of the ring transmission message, the system signal and caller ID.

22. (Currently Amended) The communication system of claim 15, wherein the system control ~~block-circuit~~ is configured to transmit the ring transmission message and to transmit the system signal simultaneously.

23. (Original) The communication system of claim 15, wherein the network exchange is a Private Branch Exchange (PBX).

24. (Original) The communication system of claim 15, wherein the caller ID terminal is a phone configured to display the CID.